

Application no. 09/154,966
Amdt. dated January 27, 2004
Reply to Office Action of October 27, 2003

Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

*Sub
D1
C1*

Claim 1 (currently amended): A dedicated bandwidth data communication switch backplane, comprising:

- a plurality of switching controllers; and
- a plurality of packet buses, each of the packet buses comprising:
 - a root, operable coupled to one of the plurality of switching controllers, for receiving packet data from the associated switching controller; and
 - a plurality of leaves for transmitting packet data received from the root, wherein of the plurality of leaves are operable coupled to one of the plurality of switching controllers excluding the switching controller coupled to the root interface;
 - wherein each of the plurality of switching controllers is adapted to concurrently transmit packet data to every other switching controller
- ~~a plurality of packet buses, each packet bus having a root interfacing with a different one of the switching controllers and a plurality of leaves interfacing with a plurality of the switching controllers, wherein a plurality of the switching controllers propagate packet data in parallel from the roots with which the switching controllers interface to the leaves.~~

Claim 2 (currently amended): The backplane according to claim 1, further comprising:

- a plurality of claim lines, each claim line interfacing with ~~[[a]]~~ one or more of the plurality of the switching controllers and having an association with a different one of the packet buses, wherein a switching controller transmits a claim signal on a packet bus's associated claim line upon identifying a packet propagated on the packet bus for capturing.

Claim 3 (currently amended): The backplane according to claim 1, further comprising:

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a plurality of stall lines, each stall line having a stall line root interfacing with a different one of the plurality of switching controllers, a plurality of stall line leaves interfacing with a plurality of the switching controllers and an association with a different one of the packet buses, wherein a switching controller transmits a stall signal from a stall line leaf to the stall line root on a packet bus's associated stall line upon identifying a congestion condition for the packet bus.

~~Claim 4-8 (canceled)~~

Claim 9 (currently amended): The backplane according to claim 1, wherein at least one of the switching controllers comprises:

a protocol domain interface adapted to receive packet data off a protocol domain;
a transmit interface adapted to transmit packet data received off ~~[[a]]~~ the protocol domain on the root of ~~[[a]]~~ the packet bus to which it is operably coupled; and
a receive interface adapted to receive packet data transmitted in parallel on the ~~roots~~ roots of a plurality of packet buses off leaves ~~of a plurality of packet buses operable coupled to the plurality of switching controllers excluding the switching controller coupled to the roots.~~

Claim 10 (previously presented): The backplane according to claim 9, wherein said at least one of the switching controllers further comprises:

a plurality of claim line interfaces adapted to exchange claiming information for the received packet data with other switching controllers.

Claim 11 (previously presented): The backplane according to claim 9, wherein said at least one of the switching controllers further comprises:

a plurality of stall line interfaces adapted to transmit congestion information for the plurality of packet buses to other switching controllers.

Claim 12 (currently amended): In a data communication switch backplane comprising ~~comprising~~ a plurality of switching controllers and a plurality of packet buses, each

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packet bus having a root interfacing with a different one of the switching controllers and a plurality of leaves interfacing with a plurality of switching controllers, wherein a plurality of the switching controllers propagate packet data in parallel from the roots with which the switching controllers interface to the leaves, a method for selectively filtering packets propagated in parallel from a plurality of transmit interfaces to a plurality of receive interfaces on the plurality of packet buses, the method comprising:

for each packet, on each receive interface, determining if the packet's destination address is a recognized forwarding address;

for each packet, on each receive interface on which the packet's destination address is recognized, transmitting a claim signal to other receive interfaces on a claim line reserved for the packet bus on which the packet was received;

for each packet, on each receive interface on which the packet's destination address is not recognized, determining whether a claim signal has been received from another receive interface;

on each receive interface, capturing the packet for which a destination address is recognized on the receive interface or for which a claim signal has been received from another receive interface; and

on each receive interface, filtering the packets for which a destination address is not recognized on the receive interface and for which a claim signal has not been received from another receive interface.

Claim 13 (previously presented): In a data communication switch backplane comprising a plurality of switching controllers and a plurality of packet buses, each packet bus having a root interfacing with a different one of the switching controllers and a plurality of leaves interfacing with a plurality of switching controllers, wherein a plurality of the switching controllers propagate packet data in parallel from the roots with which the switching controllers interface to the leaves, a method for preventing congestion from excessive rate transmission on particular ones of the packet buses, the method comprising:

on each transmit interface, propagating packets to a plurality of receive interfaces;

on each receive interface, capturing the packets for which forwarding is indicated;

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for each packet, on each receive interface on which the packet is captured,
determining whether there is sufficient room to queue the packet in a forwarding queue;
for each packet, on each receive interface on which there is not sufficient room to
queue the packet in the forwarding queue, transmitting a stall signal to a transmit
interface on a stall line reserved for the packet bus on which the packet was received; and
on each transmit interface which has received a stall signal, suspending the
propagation of additional packets.

Claim 14 (new): A data communication switch backplane comprising:
a plurality of switching controllers, each switching controller comprising:
a local area network (LAN) port controller for receiving packet data from
an associated protocol domain;
memory for retaining forwarding addresses learned from packet data
received from the associated protocol domain;
a transmit interface for transmitting packet data to at least one of the
plurality of switching controllers; and
a receive interface for receiving packet data from at least one of the
plurality of switching controllers;
a plurality of claim lines, each claim line operable coupled to each of the plurality
of switching controllers; and
wherein the plurality of claim lines are adapted to concurrently transmit a claim
signal from at least two receive interfaces of the plurality of switching controllers to the
receive interfaces of the plurality of switching controllers.

Claim 15 (new): The data communication switch backplane of claim 14, wherein the
claim signal transmitted from each of the at least two receive interfaces is transmitted if a
forwarding address of packet data received at the receive interface is retained in the
memory of at least one of the plurality of switching controllers.

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Claim 16 (new): The data communication switch backplane of claim 15, wherein each of the plurality of switching controllers captures the packet data for broadcast transmission if the forwarding address associated with the packet data is not retained in the memory of any of the plurality of switching controllers.

Claim 17 (new): A data communication switch backplane comprising:

- a plurality of switching controllers adapted to concurrently transmit packet data to at least one of the plurality of switching controllers and receive packet data from at least one of the plurality of switching controllers; and

- a plurality of stall lines, each stall line operable coupled to each of the plurality of switching controllers; and

- wherein the plurality of stall lines are adapted to concurrently transmit stall signals from at least two of the plurality of switching controllers receiving packet data to at least two of the plurality of switching controllers transmitting the received packet data.

Claim 18 (new): A dedicated bandwidth data communication switch backplane, comprising:

- a plurality of packet buses; and

- a plurality of switching controllers operably connected on the plurality of packet buses; each of the switching controllers comprising:

- a transmit interface for transmitting packet data on one of the plurality of packet buses to each of the other switching controllers; and

- a plurality of receive interfaces for receiving packet data on each of the plurality of packet buses except the one of the plurality of packet buses;

- wherein the plurality of switching controllers are adapted to transmit packet data in parallel on their respective ones of the plurality of packet buses.